The following version of the claims replaces all previous versions.

1. (currently amended) System for detection of the surface geometry of an object, comprising:

a sensor unit with apparatus for local, point by point detection of surface geometry, ~~and a robot unit for moving the sensor unit,~~ wherein the sensor unit includes

an optical scanner unit for non-touch probing and detection of the surface geometry of the object, and

a position measuring unit including a camera-based sensor designed for registering an image of a network including reference points in known positions and for determining the position of the sensor unit in a global coordinate system defined by said network of reference points[[,]];

a robot unit for moving the sensor unit; and ~~wherein~~

a computing unit ~~is provided and~~ designed for collection of data from the optical scanner unit and the position measuring unit and for transformation of the data from the optical scanner unit to relate them to the global coordinate system.

2. (previously presented) System as defined in claim 1, wherein the robot unit is designed for stepwise movement of the sensor unit.

3. (previously presented) System as defined in claim 1, wherein the network of reference points is on the object, and the position for each reference point in the network is known relative to a coordinate system related to the object.

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4. (previously presented) System as defined in claim 1, wherein the robot unit is designed to move the sensor unit step-wise over the object.

5. (currently amended) System as defined in claim 1, wherein the optical scanner unit is chosen from the following group: laser scanner, single-point distance meter, laser-based triangulation sensor combined with camera, triangulation sensor with two-axis scanning laser, triangulation sensor with laser raster projection in combination with camera, sensor based on pattern projection combined with at least one camera.

6. (previously presented) System as defined in claim 1, wherein the robot unit is chosen from the following group: arm-based robot, Cartesian robot, robot with one, two or more degrees of freedom, program controlled robot, real-time position-controlled robot based on registered position of the sensor unit in relation to the object and instruction for movement relative to current position.

7. (currently amended) System as described in claim 1, wherein said camera-based sensor in the unit for measuring position is a CCD camera.

8. (previously presented) System as described in claim 3, wherein the reference points are holes or depressions in the surface of the object.

9. (previously presented) System as described in claim 3, wherein the reference points include targets placed on the object or in the mentioned holes or depressions in the surface of the object.

10. (previously presented) Method for detection of the surface geometry of an object, including use of a sensor unit comprising apparatus for local, point by point detection of the surface geometry, a position measuring unit to determine the position of the sensor unit in relation to a network of reference points in known positions relative to a global coordinate system, and a robot unit for moving the sensor unit, the method comprising:

positioning the sensor unit such that a region of the surface of the object is inside a measurement volume of the apparatus,

optically scanning said region by means of said apparatus;

determining by means of said position measuring unit simultaneously the position of the optical scanning apparatus relative to the coordinate system of the network, and

transferring data from the scanning apparatus to a computing unit where said data are transformed to the coordinate system of the network and stored.

11. (previously presented) Method as specified in claim 10, wherein the robot unit moves the sensor unit in stepwise fashion.

12. (previously presented) Method for calibration of a sensor unit which comprises apparatus for local detection of a surface geometry, and a position measuring unit to determine the position of the sensor unit in a global coordinate system relative to a network of reference points in known positions, and where the sensor unit is mounted on a robot unit for movement relative to an object, the method comprising:

a) positioning the sensor unit such that at least one of the reference points is inside a measurement volume of the apparatus, said apparatus capable of optical scanning,

b) determining the position of the reference point relative to the optical scanning apparatus,

c) determining by means of the position measuring unit simultaneously the position of the sensor unit relative to the coordinate system of the network,

d) repeating steps a-c or b, c until the positions of at least three reference points have been determined relative to the coordinate system of the optical scanning apparatus, and

e) calculating a transformation matrix based on data registered by the scanning apparatus and the position measuring unit to describe the mutual relationship.